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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/996,559	11/30/2001	Owc Orwar	003300-868	3828

7590 03/22/2004

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EXAMINER

WEBER, JON P

ART UNIT PAPER NUMBER

1651

DATE MAILED: 03/22/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/996,559

Applicant(s)

ORWAR ET AL.

Examiner

Jon P Weber, Ph.D.

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1651

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 14 January 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-73 is/are pending in the application.
- 4a) Of the above claim(s) 41-53,57,59,61,63,65,67,69 and 71-73 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-40,54-56,58,60,62,64,66,68 and 70 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 30 Nov 2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date <u>6/17/02</u> . | 6) <input type="checkbox"/> Other: _____ |

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Election/Restrictions

Applicant's election with traverse of Group 1, claims 1-40, 54-56, 58, 60, 62, 64, 66, 68 and 70 in the Paper filed 14 January 2004 is acknowledged. The traversal is on the ground(s) that there is no burden. This is not found persuasive because burden was established at least by the separate classification.

The requirement is still deemed proper and is therefore made FINAL.

Claims 41-53, 57, 59, 61, 63, 65, 67, 69 and 71-73 are withdrawn from further consideration pursuant to 37 CFR 1.142(b), as being drawn to a nonelected Group, there being no allowable generic or linking claim. Applicant timely traversed the restriction (election). It is suggested that the on-elected claims be canceled in response to this Office action to expedite prosecution.

Claim Rejections - 35 USC § 112

Claims 1-40, 54-56, 58, 60, 62, 64, 66, 68 and 70 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

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Claim 1 recites “present in said chamber” at the last line which lacks clear antecedent basis. It is suggested that the claim recite “already present in said chamber”. Fusion cannot take place unless there are at least two cells.

Claim 22 recites “is used in step” which appears to be incomplete and is therefore confusing.

Claims 23 and 25 recite “the camber” which lacks clear antecedent basis.

Claims 24-27 recite “hollow microelectrode” which lacks clear antecedent basis.

Claims 19, 28, 30 recite “microelectrode” which lacks clear antecedent basis.

Claim 55 recites “the apparatus of claim 37” which is confusing because claim 37 is drawn to a method not an apparatus.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

- (a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.
- (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.
- (e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371(c) of this title before the invention thereof by the applicant for patent.

The changes made to 35 U.S.C. 102(e) by the American Inventors Protection Act of 1999 (AIPA) and the Intellectual Property and High Technology Technical Amendments Act of 2002 do not apply when the reference is a U.S. patent resulting directly or indirectly from an international application filed before November 29, 2000. Therefore, the prior art date of the

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reference is determined under 35 U.S.C. 102(e) prior to the amendment by the AIPA (pre-AIPA 35 U.S.C. 102(e)).

(f) he did not himself invent the subject matter sought to be patented.

Claims 1-40, 54-56, 58, 60, 62, 64, 66, 68 and 70 are rejected under 35 U.S.C. 102(b) as being anticipated by Strömberg et al. (30 Nov 2000 - web publication date) and under 35 U.S.C. 102(f) because the applicant did not invent the claimed subject matter.

Strömberg et al. (30 Nov 2000) clearly disclose the instantly claimed methods. Strömberg et al. (30 Nov 2000) has a different authorship, and therefore is “by another” until shown otherwise. The instant application has Mattias Karlsson, not in the reference. The reference has added Frida Ryttsén and Maximillian Davidson, not on the application. This raises the question of who the inventor is.

Claims 1, 3-10, 12-16, 18-23, 29-40, 66, 68 and 70 are rejected under 35 U.S.C. 102(b) as being anticipated by Müller et al. (WO 0037628) and 35 U.S.C. 102(e) as being anticipated by the English language equivalent Müller et al. (US 6,492,175). Only the latter will be cited as it is in English.

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Müller et al. (US 6,492,175) disclose a microsystem for cell permeation and cell fusion wherein on a chip is located channels and a chamber for electroporation/fusion. Cells are manipulated through the channels to the chamber where they are situated suitably close to miniaturized electrodes. The cells may be manipulated through the channels by fluid flow, dielectrophoresis, electrophoresis or flow through system (column 4). Electrodes are typically < 1 μm in diameter (column 5). Cells and cell-like objects may be used (column 3, lines 61-64).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-40, 54-56, 58, 60, 62, 64, 66, 68 and 70 are rejected under 35 U.S.C. 103(a) as being unpatentable over Müller et al. (WO 0037628) or Müller et al. (US 6,492,175) in view of Wu et al. (US 6,221,677), Buican et al. (US 5,100,627), Stice et al. (US 5,945,577) and Steenbakkens (US 6,020,170).

The teachings of Müller et al. (US 6,492,175) have been discussed above. Müller et al. (US 6,492,175) lack: 1) optical trapping or electroosmotic manipulation of the cells in the channels, 2) positioning the microelectrodes with a microscope etc., 3) hollow microelectrodes, or 4) using fusion with in vitro fertilization, cloning, or producing hybridomas or monoclonal antibodies.

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Wu et al. (US 6,221,677) disclose that means for applying such pressure to move particles through microchannels are known to the art, and include the use of a column of water or other means of applying water pressure, electroendoosmotic forces, optical forces, gravitational forces, and surface tension forces (column 12, lines 41-50).

Buican et al. (US 5,100,627) disclose using optical trapping to manipulate cells through microchannels to a chamber on a chip for the purpose of performing experiments on the selected cells.

Stice et al. (US 5,945,577) disclose electrofusion to clone animals.

Steenbakkers (US 6,020,170) discloses electrofusion to produce hybridomas and consequent monoclonal antibodies.

A person of ordinary skill in the art at the time the invention was made would have been motivated to substitute various means manipulating cells in microchannels including pressure, electroendoosmotic forces, optical forces, gravitational forces, and surface tension forces for the dielectrophoretic forces as taught by Wu et al. (US 6,221,677) and Buican et al. (US 5,100,627) in the method of Müller et al. (US 6,492,175) because these are all known methods of manipulating cells in microchannels. Using electrofusion to produce cloned cells, hybridomas, fertilized cells and the like is known in the art as shown, for example by Stice et al. (US 5,945,577) and Steenbakkers (US 6,020,170). These are obvious uses of the electrofusion method whether in microscale or macroscale.

Hence, it would have been *prima facie* obvious to one of ordinary skill in the art at the time the invention was made to use any known method of moving cells in microchannels and any known electrofusion technique in the method of Müller et al. (US 6,492,175).

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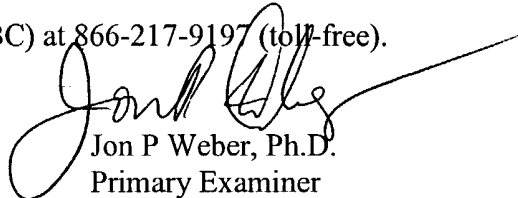
Other references cited by examiner but not relied upon are cited to establish the state of the art.

No claims are allowed.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jon P Weber, Ph.D. whose telephone number is 571-272-0925. The examiner can normally be reached on daily, off 1st Fri, 9/5/4.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Michael G. Wityshyn can be reached on 571-272-0926. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).


Jon P Weber, Ph.D.
Primary Examiner
Art Unit 1651

JPW
17 March 2004